

WHAT IS CLAIMED IS:

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1. Optical apparatus in which a thin film with an optical characteristic having wavelength dependence is formed on an optical surface,

said optical apparatus comprising a suppressor to suppress said wavelength dependence in a predetermined wavelength band.

10 2. Optical apparatus according to Claim 1, wherein said suppressor is formed on another optical surface different from said optical surface in said optical apparatus.

15 3. Optical apparatus according to Claim 2, wherein said suppressor is a thin film laid on said another optical surface.

4. Optical apparatus according to Claim 1, wherein said optical characteristic of said thin film is one of the reflectance and the transmittance.

20 5. Optical apparatus according to Claim 1, wherein said suppressor has a reflectance characteristic to increase the reflectance on the short wavelength side and decrease the reflectance on the long wavelength side with variation in incidence of rays from normal incidence to oblique incidence.

25 6. Optical apparatus according to Claim 1, wherein the wavelength characteristic of the reflectance of said suppressor is a characteristic

having a first region in which the first derivative of the wavelength characteristic is positive, on the short wavelength side and a region in which the second derivative of said wavelength characteristic is negative, in a second region on the longer wavelength side of said first region.

7. Optical apparatus according to Claim 6, wherein said predetermined wavelength band is defined between said first region and second region.

8. Optical apparatus according to Claim 1, wherein the following relation is satisfied:

$$0.05 \geq \Delta\lambda/\lambda,$$

where λ is a center wavelength of said predetermined wavelength band and $\Delta\lambda$ a width of said predetermined wavelength band.

9. Exposure apparatus for transferring a predetermined pattern formed on a mask under illumination, onto a work,

said exposure apparatus comprising the optical apparatus as set forth in Claim 1.

10. Exposure apparatus according to Claim 9, comprising a light source for supplying illumination light,

wherein said light source supplies the illumination light including at least two bright lines, and

wherein said at least two bright lines are in said predetermined wavelength band.

11. Exposure apparatus according to Claim 9, comprising an illumination optical system for illuminating said mask, based on illumination light from a light source, and a projection optical system for forming an image of the pattern of said mask on the work,

10 wherein said suppressor is provided in at least either one of said illumination optical system and said projection optical system.

12. An exposure method wherein said pattern on said mask is transferred onto said work by use of the exposure apparatus as set forth in Claim 9.

15 13. An exposure apparatus for transferring a predetermined pattern formed on a mask under illumination, onto a workpiece, comprising:

a light source;

20 an illumination optical system arranged in an optical path between said light source and said mask;

a projection optical system arranged in an optical path between said mask and said workpiece;

25 a thin film, with an optical characteristic having wavelength dependence, formed on an optical surface arranged in at least one of said optical paths; and,

a suppressor, arranged in at least one of said optical paths, to suppress said wavelength dependence in a predetermined wavelength range.

5 14. The exposure apparatus according to claim 13, wherein said suppressor is formed on another optical surface different from said optical surface in said at least one of said optical paths.

10 15. The exposure apparatus according to claim 14, wherein said suppressor is a thin film laid on said another optical surface.

15 16. The exposure apparatus according to claim 15, wherein said thin film is one of the reflectance and the transmittance.

20 17. The exposure apparatus according to claim 13, wherein said predetermined wavelength range includes a wavelength of an illumination light.

25 18. An exposure method of transferring a predetermined pattern formed on a mask under illumination, onto a workpiece, comprising the steps of:

providing a light from a light source; illuminating said mask with said light from the light source;

25 projecting said pattern on said mask onto said workpiece;

passing the light through a thin film with an

optical characteristic having wavelength dependence;
and,

passing the light through a suppressor,

wherein said thin film is formed on an optical surface in an optical path between said light source and said workpiece, and

wherein said suppressor suppresses said wavelength dependence in a predetermined wavelength range.

10 19. The method according to claim 18, wherein said predetermined wavelength of an illumination light.

20. The method according to claim 18, wherein said thin film is one of the reflectance and the transmittance.

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